

STUDY ON HERONRY OF PAINTED STORKS IN AND AROUND OF SANATHAL LAKE, AHMEDABAD, GUJARAT

NIKITA PATEL¹ & ROHAN THAKKER²

¹Department of Environmental Studies, School of Human & Environmental Sciences, North Eastern Hill University,
Meghalaya, India

²Department of Environmental Science, Gujarat University, Gujarat, India

ABSTRACT

Sanathal is a village 20 km from Ahmedabad, bounded with a lake known to be Sanathal. This lake is of 14th century constructed by King Siddharaj Jaysinh. Lake surrounded by its serene beauty with lavish green trees. The vegetation around lake has shaped a very decent habitat plus a source of attraction especially for many winter migrants. Heronry of painted storks were observed at Sanathal Lake in the winter period of October 2020 to February 2021. More than 2000 birds have recorded with successful breeding.

KEYWORDS: Migratory Birds, Nesting, Heronry, Successful Breeding & Sanathal Lake

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1. INTRODUCTION

The study on a single species heronry of painted stork (*Mycteria leucocephala*) was carried out in and around of Sanathal Lake, which is situated in the city of Ahmedabad. Heronry is considered as the group nesting of colonial water birds during the breeding period, which shows spatial and temporal clumping of nests (Roshnath *et al.* 2017). The term "heronry" refers traditionally to a nesting congregation of colonial aquatic birds belonging to the family Ardeidae which comprises of herons and egrets (Ali, 1996). However, Ray *et al.* (1996), defined heronry as the nesting areas of herons, egrets, storks, pelicans, ibis, darter and cormorants of the orders Ciconiformes, Pelecaniformes and Suliformes. Heronries may consist of different species nesting in a same area/tree (mixed heronry) or only a single species, as quoted by Roshnath *et al.* 2013.

Here, Sashikumar *et al.* (2015) says that, "these birds are integral part of our agricultural ecosystem, aiding pest control and enhancing nutrient cycling". As followed by the same that, protection of heronries is very important for the conservation and management of these species. Whereas Roshnath *et al.* (2013) also adds that, "these piscivorous birds are one of the top predators in the aquatic food chain. Monitoring their population can indicate the health of the aquatic ecosystem, fresh water as well as brackish water". Moreover Subramanyan (2005), states that counting of colonial nests can be regarded as an effective and accurate way to determine the breeding population of water birds. Hence the documentation of heronries and their breeding birds is a significant part to conserve environment.

As mentioned by INTACH-Gujarat and Urban Management Centre that "Sanathal is a village in Sanand Taluka located 20 km from Ahmedabad District on Sarkhej-Bavla Road. This village has a high archaeological importance due to an ancient lake located near Gram Panchayat Office. The lake was built by Siddharaj Jaysinh,

King of Patan during 14th century. The lake was constructed using local material like bricks-mortar and lime. The centre of the lake has ruins of an ancient structure called the 'bakasthal' a place for birds to rest in the centre of the lake. The sluice — a water channel is constructed in sandstone decorated that is ornamented with bands of geometrical design and Gagrak Patti. The inlet is covered with a structure with Square columns. The staircases inside the sidewalls of the structure currently lie in dilapidated condition but its mammoth size reflects its glory” (INTACH-Gujarat, 2016). The spot has substantial possibility to become an important attraction to tourists at the local as well as at state level as of its vicinity to Nal Saovar. Thus, there is a necessity to must conserve the lake and surrounding vegetation. Where as Fellowes *et al.* (2001) states that “successful conservation and recovery of water bird species depends on an improved understanding of ecological requirements of these birds” and breeding ecology, especially the phenology of birds is related to climatic conditions (Jakubas, 2011).

Here, Roshnath *et al.* (2019) states that, “water birds were strong colonial and select their areas for breeding only after careful evaluation of the prevailing safety measures. Breeding success in water birds principally depends on inter-species and intra-species interactions in heronries” (Roshnath, 2019). They choose the site which protects nests from the predators, adverse climatic conditions and offers constant resources for nesting, breeding, foraging, and feeding (Hilaluddin *et al* 2003, Evans *et al* 2015, Minias and Kaczmarek 2013). Further, “the accessibility of nesting trees and nesting materials are also the most important factors which attract the water birds and besides these, features including the size, height, canopy, number of branches also have a key role for selecting the nesting area” as quoted by (Erwin *et al* 1998, Baxter and Fair weather 1998, Ajitha and Jose 2013). Also Parmesan & Yohe (2003) adds that, “the knowledge of the arrival dates and breeding dates of bird is important for studying long term trends of changes in timing of breeding in the ongoing climate changes”. Therefore, the present study was not only to focus on counting of nests but also to create awareness for their conservation.

2. MATERIALS AND METHODS

2.1. Study Site

The heronry is located in and around of Sanathal lake (22°96'85"N & 72°46'88"E) in Sanathal village of Sanand taluka, Gujarat, India (Map 1). The vegetation found in this area mainly consists of naturally grown shrubs and tree species. The study area experiences a temperature, ranges from 13°C-43°C in winter (November – February) and summer (March – June) respectively, and an average rainfall (July – September) in the area is 800mm. The lake and trees covered around it have shaped a very decent habitat & source of attraction for migratory birds. It consists of various shrubs including invasive species & many of tree species like *Prosopis Juliflora*, *Azadirachta indica*, *Australian Acacia*, *Salvadora Persica*, *Argemone mexicana*, *Argyreia nervosa*, *Parkia speciosa*, *Grangea anthemoides*, *Manilkara zapota*, *Neolamarckia cadamba*, *Prunus dulcis*, *Piper longum*, *Combretum indicum*, *Ziziphus nummularia*, *Acacia nilotica*, *Salvadora persica*, *Lawsonia inermis*, *Syzygium cumini*, *Manilkara hexandra*, *Ficus religiosa*, *Ficus benghalensis*, *Tinospora Cordifolia*, *Eucalyptus*, *Caesalpinia pulcherrima*, *Lantana camara*, etc., which is extremely suitable to heronry birds for nesting, foraging, feeding, roosting and breeding.



Map 1: Satellite View of Sanathal Lake Showing the Location of Heronry.



Plate 1: Heronry Site.

2.2. Methods

The nesting data was collected during the breeding season, from October to February in 2020-2021 to the various points of heronry site. Sighting was carried out twice a week during all the months (October- February). Total counting were made during morning (06:00 to 08:00 hours) and late evening (17:00 to 19:00 hours). Here, the total count method, quoted by “Bibby *et al.* 2000”, was used to enumerate the bird numbers and nesting trees in & around Sanathal lake were enumerated. The total numbers of painted storks, their nests, chicks and their all various activities observed directly using a pair of binocular (10×50) and camera (canon 1500D). It was noticed that each nests occupied with a pair of male and female painted storks with their active participation.

3. RESULT AND DISCUSIONS

Here, some important activities of breeding species were recorded.

3.1. Arrival Period of Migratory Birds

Above 2000 of Painted storks were arrived to Sanathal Lake, especially for breeding purpose. They arrived in the mid of October and involved in nesting activities.



Plate 2: Painted Storks Observed in October.

3.2. Total Nests Observed

Study was conducted in and around of Sanathal lake and explored the various points for nesting located towards the lake. A total of 1200 nests were of Painted storks observed on various trees at heronry site. Nests were recorded from such points like, trees covered to lake area, trees besides the roads towards lake.

Table 1: Status of Migratory Birds

Scientific Name	Common Name	Order	Family	No. of Birds	No. of Nests
<i>Mycteria Leucocephala</i>	Painted Stork	Ciconiiformes	Ciconiidae	>2000	1200

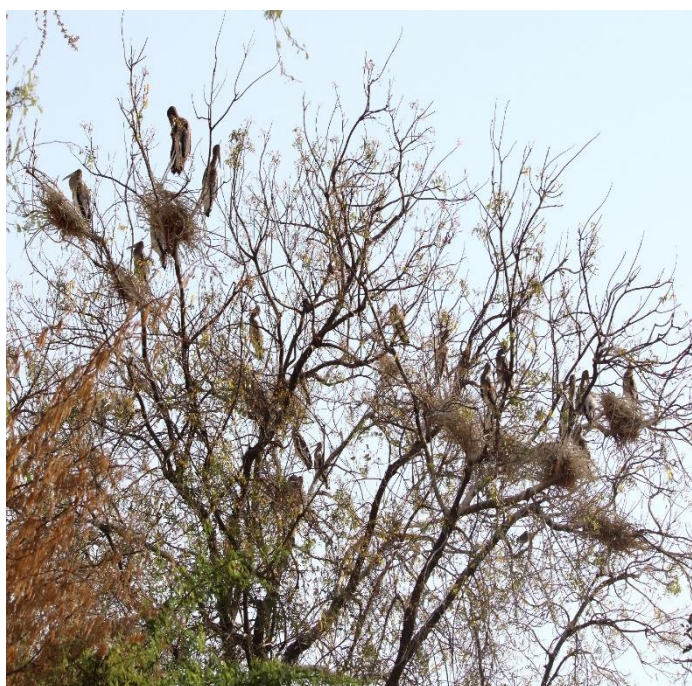




Plate 3. & Plate 4: View of Painted Storks with their Nests.

3.3. Activities of Birds with Their Nests

While exploring the site during study, various activities like nest building, feeding, foraging, roosting, resting were observed in the period of October- November and it lasts up to late winter.



Plate 5: Birds Observed while Building Nests.



Plate 6, 7 & 8: While Feeding.

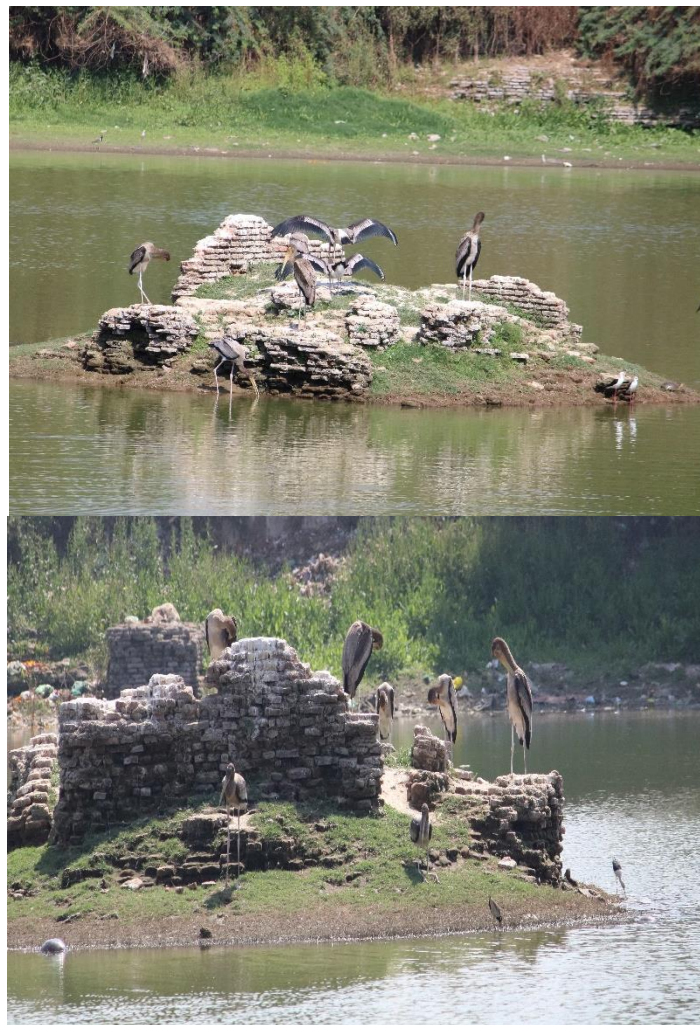


Plate 9 & 10: Birds while Resting in Centre of Lake called “Bakasthal”- a Place for Birds to Rest.



Plate 11: Fish Species Eaten by Painted Storks is Sharpbelly Fish (*Hemiculter leuciscus*).

3.4. Trees Species Used For Nesting

Study site comprises various tree species as already mentioned in introduction. Here, Maximum numbers of tree species used by painted storks were *Ficus Benghlensis*, *Azadirachta indica*, *Syzygium cumini* & *Ficus religiosa*, was used for nesting and successful breeding.

Table 2: Tree Species used for Nesting

Tree Species	Nests (%)
<i>Ficus Benghlensis</i>	40%
<i>Azadirachta indica</i>	30%
<i>Syzygium cumini</i>	20%
<i>Ficus religiosa</i>	5%

3.5. Area Covered to Heronry

As Sanathal Lake is a water body, several nests were observed very near to the lake. As they have open access to foods. We observed painted storks to catch the fishes from lake and to feed their chicks.

DISCUSSIONS

Although, Gujarat have importance for many migratory birds and even during the non- breeding seasons, based on their counts. But here, our first observation on successful breeding of painted storks in the Sanathal lake has added additional ecological value to the area.

During our first visit to the site, we have noticed that the painted storks were involved in nest building, from 16th of October. Later, in our next visits we started to observe them while doing various activities. As we seen that there in the centre of has an ancient structure, where birds used to rest in a day or also the point to catch fish. Later, we visited in the month of November that breeding activity were started. After that, we started to observe them while feeding. These was very interesting as we also captured every moments of birds. As the area around Sanathal lake is not much noisy and not a residential area, the place is very safe for breeding and nesting. Because of very less movement of humans to the heronry site and no vehicular traffic, birds were not have any threats to hunting and no disturbance by people.

4. CONCLUSIONS

As the study area is observed with the presence of plentiful migratory birds, there is a necessity of long- term monitoring

and a continuous intensive care for their protection. If some consideration will provide to the site, these could be positively develop as a good site for birders and also continuous study will allow monitoring of their status and periodic changes in the painted storks.

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